UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/295,329	04/21/99	KAWABE Y	054114

IM22/1114

MARK BOLAND
SUGHRUE MION ZINN MACPEAK & SEAS
2100 PENNSYLVANIA AVENUE N W
WASHINGTON DC 20037-3202

EXAMINER	
CLARKE, Y	
ART UNIT	**PAPER NUMBER**
1752	13

DATE MAILED: 11/14/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/295,329	Applicant(s) KAWABE ET AL.	
	Examiner Yvette M Clarke	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

Continued Prosecution Application

1. The request filed on September 19, 2000 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/295,329 is acceptable and a CPA has been established. An action on the CPA follows.

2. The examiner notes that the prior art reference of Aoai (US 5,945,250) as applied in the previous office action in not applicable as prior art under 35 USC 103(c), as the prior art and the pending application were commonly owned at the time of invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suwa (EP 789,278). Suwa teaches a radiation sensitive resin composition comprising a resin containing an alicyclic skeleton in its backbone (A), and acid generating agent (B), an acid cleavable additive, a nitrogen containing basic compound and additives such as surface active agents. The said resin A may contain at least one group which is cleaved by an acid at any position thereon. The alicyclic skeleton may optionally contain one or more substituents. The said resin is preferably a resin which becomes alkali soluble due to catalytic action of an acid to cleave the acid cleavable groups. Preferred alicyclic skeletons are given by the general formula (2) (page 3, l. 20-15, l.

57). The taught acid generating agent can selected from the group consisting of onium salts, halogen containing compounds, diazoketone compounds, sulfone compounds and sulfonic acid compounds (pg. 16, l. 1-pg. 17, l. 3). The said acid generators can be used singly or in combination of two or more. The acid generator is present in the amount of 0.1-10 pbw per 100 pbw of the resin (pg. 17, l. 4-9). Suwa teaches that the addition of an acid cleavable additive serves to improve contrast as a positive type photoresist and increase affinity of the resin for an alkaline developing solution. The said additive includes polymeric compounds or low molecular weight compounds having at least one acid cleavable group (pg. 17, l. 10-15). Specific examples include t-butyl adamantane carboxylate, cholic acid t-butyl ester, etc. (pg. 17, l. 58-pg. 18, l. 9). The addition of a compounds which acts as a Lewis base to an acid generated from the acid generating agent improves perpendicularity of the side walls formed by a positive working resist system. Specific examples of such compounds include tri-n-butylamine, triethanolamine and 2-methylpryridine (pg. 18, l. 15-28). A variety of other additives can optionally be added to the resin composition. These additives include surface active agents such as FLUORAD FC430, FC431, SURFLON S-382, SC-101 and the like (pg. 18, l. 36-44). It is the examiner's position the taught FLUORAD compounds meet the limitation of a fluorine containing surfactant and the SURFLON compounds meet the limitation of a silicon containing surfactant. The said additives can be used singly or as a mixture of two or more. The composition solution is prepared by dissolving the taught components in a solvent. Suitable solvents include propylene glycol monoethyl ether acetate, 2-heptanone, methyl 3-methoxypropionate and ethyl 3-ethoxypropionate,

ethylene carbonate, propylene carbonate and so forth (pg. 19, l. 5-26). The solvents can be used in singly or in a mixture of two or more. A variety of radiation types can be used to expose the resist composition. Examples include far UV radiation such as KrF and ArF (pg. 19, l. 30-37). In example 5, Suwa exemplifies a resin composition comprising resin AIII-4 (pg. 25, l. 25-pg. 26, l. 25), 4-hydroxynaphthyldimethylsulfonium triflate as an acid generating agent, tri-n-butylamine as the acid cleavable additive, and a solvent mixture of ethyl 2-hydroxypropionate and 2-heptanone (pg. 42, l. 35-pg. 43, l. 25; Table 2). It is the examiner's position that the exemplified acid generator meets the limitation of an onium salt and the said acid cleavable additive meets the limitation of a low molecular acid decomposable compound as claimed by the applicant. One of ordinary skill in the art would have been motivated by the teachings of Suwa to include either a single or a combination of two or more surface active agents into the exemplified composition of example 5 in order to improve the coating properties. Although a solvent mixture of three components is not exemplified one of ordinary skill in the art would have been enabled by the teachings of Suwa to use two or more of the disclosed solvents to prepare the taught composition.

5. Claims 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suwa (EP 789,278) as applied to claims 1-15 above, and further in view of Niki (US 5,744,281). Suwa as discussed as above teaches all the limitations of the claims however it fails to exemplify the explicit use of a solvent mixture comprising 60-90% ethyl lactate and 10-40% ethyl 3-ethoxy propionate. Suwa exemplifies the use of a solvent mixture of ethyl 2-hydroxypropionate and 2-heptanone (see example 5) in a

ratio of 173:406. It is the examiner's position that ethyl 2-hydroxypropionate and ethyl 3-ethoyxpropionate are known variants and are considered equivalents in the art. Suwa teaches and ethyl 3-ethoyxpropionate as a suitable solvent choice. Suwa fails to disclose ethyl lactate as a suitable solvent for the taught composition. However, it does exemplify the use of n-butyl acetate and discloses that ethyl acetate, n-propyl acetate and benzyl acetate are all suitable solvents (pg. 19, l. 10-25). The prior art reference of Niki teaches that ethyl lactate, butyl acetate, ethyl acetate and methyl lactate are all known equivalents of ester-type solvents in the art of photoresist compositions. Therefore, one of ordinary skill in the art would have been motivated by the teachings of Suwa and Niki to substitute ethyl 3-ethoxypropionate and ethyl lactate for the exemplified ethyl 2-hydroxypropionate and taught acetate compounds (i.e., butyl acetate, n-propyl acetate, ethyl acetate) of Suwa, respectively and expect reasonably similar results. Motivation is based on the idea that similar compounds will produce reasonably similar results.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Aoai et al. (US 5,824,451) which teaches a positive photosensitive composition.
- Kodama (US 6,060,213) which teaches a positive working photosensitive composition comprising a basic nitrogen containing compound, an acid generating compound and a resin containing acid labile groups.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette M Clarke whose telephone number is 703-305-0589. The examiner can normally be reached on Monday-Thursday 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 703-308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3599 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

ymc
November 10, 2000

JOHN S. CHU
PRIMARY EXAMINER
GROUP 1100